

### REMARKS

This Amendment responds to the Office Action dated July 1, 2005 in which the Examiner rejected claims 1-25 under 35 U.S.C. §103.

Applicant respectfully requests the Examiner acknowledges the priority document which was filed on March 22, 2004. A copy of the submission and stamped postcard are enclosed for the Examiner's convenience.

As indicated above, a minor typographical error in the specification has been corrected. Applicant respectfully requests the Examiner approves the correction.

Claim 1 claims an image forming device capable of replacing any of a plurality of cartridges, claim 9 claims an image forming method and claim 17 claims a program product. The device and method include a driving unit, detecting unit, control unit and receiving unit. The driving unit moves the position of the toner cartridge. The detecting unit detects necessity of replacing a toner cartridge. The control unit controls the driving unit in order to move a toner cartridge that needs to be replaced, to a specified replacement position preset for toner cartridge replacement, when the necessity of replacing a toner cartridge is detected. A receiving unit receives printing instruction. The control unit controls the driving unit to move each toner cartridge to a printable position. When a printing instruction is received while the toner cartridge which needs to be replaced has been moved to a replacement position and is ready to be replaced, the toner cartridge that needs to be replaced is moved back to a replacement position after a specified printing is completed.

Through the structure and method of the claimed invention controlling a driving unit such that when a printing instruction is received while a toner cartridge,

that needs to be replaced has been moved to a replacement position and is ready to be replaced after a specified printing is completed, the driving unit moves the toner cartridge back to the replacement position as claimed in claims 1, 9 and 17, the claimed invention provides an image forming device and method allows a cartridge that still has a small amount of toner to be used and thus reduced operating costs as well as allows urgent matters to be quickly printed. The prior art does not show, teach or suggest the invention as claimed in claims 1, 9 and 17.

Claims 1-16 were rejected under 35 U.S.C. §103 as being unpatentable over Kobayashi et al (U.S. Patent No. 6,338,539) in view of Kawana (U.S. Patent No. 5,907,748).

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, applicant respectfully requests the Examiner withdraws the rejection to the claims and allows the claims to issue.

*Kobayashi et al* appears to disclose when an ink cartridge or cartridges are to be replaced, only the ink cartridge that is to be replaced is selected and automatically moved to a replaceable position (col 2, lines 33-36). FIG. 3 shows an embodiment of a control unit for the ink cartridge replacing operation of the printer and for executing a clogging-removal process. An ink cartridge attachment/detachment detecting means 30 receives signals from switches 31 and 32, to thereby detect the attachment and detachment of the ink cartridges 7 and 8. Those switches are to be pressed against the positions on the carriage 11 being confronted with the ink cartridges 7 and 8, or the cartridge receiving surfaces of the carriage 11 in this embodiment. An ink cartridge replacement judging means 33

receives a signal from the cartridge attachment/detachment detecting means 30, and judges whether or not the ink cartridge 7 or 8 has been replaced with another in accordance with the received signal. A carriage position detecting means 34 responds to a signal from a carriage position detector 35 and produces a signal on the following positions: at least a home position of the carriage 11, a first replacement position where the first ink cartridge 7 confronts the window 6, a second replacement position where the second ink cartridge 8 confronts the window 6, a flushing position where it receives the ink from the ink cartridges 7 and 8 when the flushing operation is carried out, i.e., positions where it confronts the caps 20 and 21 in this embodiment, cleaning positions where the ink cartridges 7 and 8 may be wiped or rubbed with is the cleaning unit 24, and the like. A carriage motor control means 36, under control of a sequence select means 45, drives the carriage drive motor 13 through a CR (carriage) motor drive means 47 to reciprocally move the carriage 11 for printing. Further, the carriage motor control means 36 receives signals from a suction control means 39 to be described later and the carriage position detecting means 34, and moves the carriage 11 to the home position, first replacement position, second replacement position, flushing position, and the cleaning position in accordance with those received signals. When the replacing of the ink cartridge 7 or 8 is normally completed, the carriage motor control means 36 moves the carriage 11 to the home position by a lower torque or at a lower speed than in a normal state or a combination of them (col 4, lines 24-63). An ink level detecting means 41 integrates the number of printed dots, the number of ink drops discharged in the flushing operation, and the amount of ink consumed in the ink charging operation and cleaning operation, and computes an ink level of inks still left

in the ink cartridges 7 and 8 on the basis of the result of the integration. When the ink cartridges 7 and 8 are replaced with new ones, the ink level detecting means 41 resets the integrated values. When an instruction to replace at least one of the ink cartridges 7 and 8 is issued, the ink level detecting means 41 checks an ink level of the ink left in the other ink cartridge. When the amount of the ink left is less than the amount of ink consumed by the sucking operation carried out at the time of the cartridge replacement, the ink level detecting means 41 judges that the ink level of the ink left in the ink cartridge 7 or 8 is an ink end level. A case opening detecting means 43 receives a signal derived from a switch 44, which operates responsive to the opening/closing of the case cover 1, and produces a signal indicative of an opening/closing of the case cover 1 (col. 5, lines 18-41). When the black ink cartridge 7 and the color ink cartridge 8 are both attached to the carriage 11, the sequence select means 45 executes a process for checking the amount of ink left in the ink cartridges 7 and 8 on the basis of the data from the ink level detecting means 41 (step S116). If the amount of ink left in one of the ink cartridges 7 and 8 is extremely small so as to be indicative of an ink end (step S117), the sequence select means 45 starts a sequence of the cartridge replacing process (step S115). When the power switch P has been turned off before the ink cartridges 7 and 8 have been replaced in a faultless manner (step S114), the sequence select means 45 starts again the ink cartridge replacing work (step S115) or executes the suction process after the replacement of the ink cartridges 7 and 8. When the cartridge replacing work ends in a faultless manner, the sequence select means 45 checks if the case cover 1 is opened on the basis of the signal from the case opening detecting means 43 (step S119). When the case cover 1 is opened, the sequence select means 45

carries out the cartridge replacing process (step S115). As a result, the sequence of the cartridge replacing process is automatically read out by opening the case cover 1 immediately after the power on or turning on the power switch P after the case cover 1 is opened (col 6, lines 16-45). When a time to check the amount of residual ink is reached, the sequence select means 45 judges whether or not the amount of the ink left in one of the ink cartridges, e.g., the black ink cartridge 7, is at an ink end level on the basis of the data from the ink level detecting means 41 (S139 in FIG. 8). If it is at an ink end, the sequence select means 45 causes the ink end indicator BE to blink to indicate a black ink end (S140). Subsequently, the sequence select means 45 checks the amount of the ink left in the other ink cartridge, i.e., the color ink cartridge 8 in this embodiment. If the result shows that it is not at the ink end level, but not less than an amount of the ink that will be consumed by the ink suction in the cleaning (S141), the sequence select means 45 judges that the amount of the residual ink is at an ink end level (S142), and causes the ink end indicator CE for the color ink cartridge 8 to blink to indicate the ink end (S143) (col. 8, line 60 through col. 9, line 8).

Thus, *Kobayashi et al* merely discloses if the ink level was insufficient in a cartridge, blinking an indicator light (column 8, line 60 through column 10, line 5). Nothing in *Kobayashi et al* shows, teaches or suggests that while a toner cartridge needs to be replaced and is at the replacement position ready to be replaced, when a printing instruction is received, after a specified printing is completed moving the toner cartridge back to a replacement position as claimed in claims 1 and 9 (and claim 17). Rather, *Kobayashi et al* merely discloses that when an ink level is insufficient, blinking an indicator light.

Additionally, *Kobayashi et al* merely discloses an ink cartridge attachment/detachment detecting means 30 which detects attachment and detachment of ink cartridges 7 and 8 and an ink cartridge replacement judging means 33 which determines whether or not the ink cartridges 7 or 8 have been replaced with another (column 4, lines 23-36). Nothing in *Kobayashi et al* shows, teaches or suggests that while a toner cartridge that needs to be replaced has been moved to a replacement position and is ready to be replaced, when a printing instruction is received, after a specified printing is completed, the toner cartridge is moved back to the replacement position as claimed in claims 1 and 9 (and claim 17). Rather, *Kobayashi et al* merely discloses detecting attachment and detachment of the cartridges and determining whether or not the ink cartridges have been replaced.

*Kawana* appears to disclose an electrical connector capable of signaling whether or not a removably installable process cartridge or the like has been installed in the main assembly of an image forming apparatus, a process cartridge comprising such an electrical connector, and an electrophotographic image forming apparatus compatible with such an electrical connector(col 2, line 64 through col. 3, line 7). In FIG. 15, a photosensitive drum door sensor 416 is a switch that detects the opening or closing of the door which occurs when a photosensitive drum cartridge is exchanged or removed. When a signal 418 outputted by this sensor 416 indicates that the door is open, the CPU 14 determines that the photosensitive drum cartridge is to be exchanged with a fresh one, or removed, and then updates the contents of the photosensitive drum memory 207 (col. 12, line 61 through col. 13, line 1). FIG. 16 is a flow chart for the control, in particular, the control for the photosensitive drum memory, executed by the CPU 14 as a photosensitive drum

cassette is installed. As the electrical power source of the main assembly of a printer is turned on (419), it is determined whether or not the photosensitive drum cartridge door is closed (420). When it is confirmed that the photosensitive drum cartridge door is closed, a voltage Vcc is supplied to the photosensitive drum memory 207 (421) to confirm (422) that a photosensitive drum cartridge is present (422). As for the method for confirming the presence of the photosensitive drum cartridge, confirmation is made based on the logic level of the voltage Vcc of the return signal from the connector on the cartridge side. When it is confirmed that there is no cartridge, the absence of the cartridge is reported to the user through a display panel or a host computer (427). When it is confirmed that there is a cartridge, necessary information is read from the EEPROM, that is, the memory of the photosensitive drum (423). At this point, the printer enters a state of being on standby, or being ready for a printing operation. When the photosensitive drum cartridge door is not open (425) after a printing operation, the state of the main switch of the printer main assembly is checked (426) then the main switch is ON, the printer goes back to the state of being on standby (424) for the next printing operation. On the other hand, when the photosensitive drum cartridge door is open (425), the contents of the photosensitive drum memory 207 are updated (429), and the voltage Vcc is turned OFF (428). When the main switch of the printer main assembly is OFF (426), the contents of the photosensitive drum-memory 207 are updated (430); the voltage Vcc is turned OFF (431); and the electrical power source for the entire printer is turned OFF (432) (col. 13, line 18-52).

Thus, *Kawana* merely discloses a sensor 416 which indicates that a door is open so that a CPU 14 determines that a photosensitive drum cartridge is to be

exchanged with a new one. (Column 12, lines 61-66). Nothing in *Kawana* shows, teaches or suggests while a toner cartridge that needs to be replaced, has been moved to a replacement position and is ready to be replaced, when a printing instruction is received, after a specified printing is completed, moving the toner cartridge back to the replacement position as claimed in claims 1, 9 (and claim 17). Rather, *Kawana* merely discloses that when a door is open, determining that the cartridge is to be exchanged.

The combination of *Kobayashi et al* and *Kawana* would merely suggest that when the ink level is low, blinking an indicator is taught by *Kobayashi et al* and when a door is opened, determining that the cartridge is to be replaced is taught by *Kawana*. Thus nothing in the combination of the references shows, teaches or suggests that while the toner cartridge that needs to be replaced has been moved to a replacement position and is ready to be replaced, when a printing instruction is received, after a specified printing is completed, moving the toner cartridge back to the replacement position as claimed in claims 1 and 9. Therefore, applicant respectfully requests the Examiner withdraws the rejection to claims 1 and 9 under 35 U.S.C. §103.

Claims 2-8 and 10-16 depend from claims 1 and 9 and recite additional features. Applicant respectfully submits that claims 2-8 and 10-16 would not have been obvious within the meaning of 35 U.S.C. §103 over *Kobayashi et al* and *Kawana* at least for the reasons as set forth above. Therefore, applicant respectfully requests the Examiner withdraws the rejection to claims 2-8 and 10-16 under 35 U.S.C. §103.



Claims 17-25 were rejected under 35 U.S.C. §103 as being unpatentable over *Kawana* and further in view of *Kobayashi et al.*

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, applicant respectfully requests the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, *Kawana* merely discloses determining that a drum cartridge is to be exchanged when a signal indicates that a door is open. Additionally, as discussed above, *Kobayashi et al* merely discloses that when the ink level is low, blinking an indicator light. Thus nothing in *Kawana* and *Kobayashi et al* taken singularly or in combination, shows, teaches or suggests that while a toner cartridge to be replaced has been moved to a replacement position and is ready to be replaced, when a printing instruction is received, after a specified printing is completed, moving the toner cartridge back to the replacement position as claimed in claim 17. Therefore, applicant respectfully requests the Examiner withdraws the rejection to claim 17 under 35 U.S.C. §103.

Claims 18-25 depend from claim 17 and recite additional features. Applicant respectfully submits that claims 18-25 would not have been obvious within the meaning of 35 U.S.C. §103 over *Kawana* and *Kobayashi et al* at least for the reasons as set forth above. Therefore, applicant respectfully requests the Examiner withdraws the rejection to claims 18-25 under 35 U.S.C. §103.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is respectfully requested to contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, applicant respectfully petitions for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL PC

By:

  
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Registration No. 32,131

Date: September 30, 2005

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**New Patent Application Postcard**

38

Inventor: Tomoaki SHIMADA Appln. No.: Unassigned  
Docket No.: 011350-333 Working Atty.: PNM/bxf Date: March 22, 2004  
Title: IMAGE FORMING DEVICE, IMAGE FORMING METHOD, AND PROGRAM PRODUCT

Dkt. Clerk Initials

The following was/were received in the U.S. Patent and Trademark Office on the date stamped hereon:

- ☒ Utility Patent Application Transmittal
- ☐ Design Patent Application Transmittal
- ☐ Continuing Prosecution Application Request
- ☐ Continuing/Divisional Application (Rule 1.53(b)) with copy of application
- ☐ Provisional Application Cover Sheet
- ☐ Provisional Application Transmittal
- ☐ Request for Continued Examination

## INCLUDING:

- ☒ Specification (pages 1 - 23 )
- ☒ Claims (claims(s) 1 - 25 , 7 pgs.)
- ☒ Drawings (Fig(s). 1 - 10 , 8 pgs.)
- ☒ Abstract of the Disclosure

- ☒ Executed Declaration/Power of Attorney
- ☐ Unexecuted Declaration/Power of Attorney
- ☒ Assignment/Assignment Recordation Form Cover Sheet (PTO-1595)
- ☒ Submission of Certified Copy of Priority Document w/ 1 certified copy(ies)
- ☐ Preliminary Amendment
- ☐ Information Disclosure Statement Transmittal
- ☒ Information Disclosure Citation (PTO-1449)
- ☒ Information Disclosure Statement w/ 1 document(s)
- ☐ Petition for        Month Extension of Time
- ☒ Gen. Authorization for Petition for Ext. of Time and Pymt. of Fees
- ☒ Patent Application Data Sheet

- ☒ Check for \$ 900.00 is enclosed
- ☐ Check for \$        is enclosed
- ☐ Charge \$        to Deposit Account
- ☐ Payment by credit card. Form PTO-2038 is attached.

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**New Patent Application Postcard**

Inventor: Tomoaki SHIMADA Appln. No.: Unassigned  
Docket No.: 011350-333 Working Atty.: PNM/bxf Date: March 22, 2004  
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- ☒ Submission of Certified Copy of Priority Document w/ 1 certified copy(ies)
- ☐ Preliminary Amendment
- ☐ Information Disclosure Statement Transmittal
- ☒ Information Disclosure Citation (PTO-1449)
- ☒ Information Disclosure Statement w/ 1 document(s)
- ☐ Petition for        Month Extension of Time
- ☒ Gen. Authorization for Petition for Ext. of Time and Pymt. of Fees
- ☒ Patent Application Data Sheet

- ☒ Check for \$ 900.00 is enclosed
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Patent  
Attorney Docket No. 011350-333

THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Tomoaki SHIMADA

Application No.: Unassigned

Filing Date: March 22, 2004

Title: IMAGE FORMING DEVICE, IMAGE FORMING METHOD, AND PROGRAM PRODUCT

Group Art Unit: Unassigned

Examiner: Unassigned

Confirmation No.: Unassigned

**SUBMISSION OF CERTIFIED COPY OF PRIORITY DOCUMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The benefit of the filing date of the following priority foreign application(s) in the following foreign country is hereby requested, and the right of priority provided in 35 U.S.C. § 119 is hereby claimed.

Country: Japan

Patent Application No(s): 2003-127906

Filed: May 6, 2003

In support of this claim, enclosed is a certified copy(ies) of said foreign application(s). Said prior foreign application(s) is referred to in the oath or declaration. Acknowledgment of receipt of the certified copy(ies) is requested.

Respectfully submitted,

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Date: March 22, 2004

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**DOCKETED**  
filed 3-22-04

日 本 国 特 許 庁  
JAPAN PATENT OFFICE

別紙添付の書類に記載されている事項は下記の出願書類に記載されている事項と同一であることを証明する。

This is to certify that the annexed is a true copy of the following application as filed with this Office.

出 願 年 月 日            2 0 0 3 年    5 月    6 日  
Date of Application:

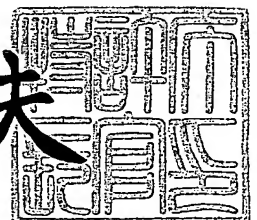
出 願 番 号            特 願 2 0 0 3 - 1 2 7 9 0 6  
Application Number:  
[ST. 10/C] :            [ J P 2 0 0 3 - 1 2 7 9 0 6 ]

願        人            ミノルタ株式会社  
Applicant(s):

2 0 0 4 年    1 月 2 7 日

特許庁長官  
Commissioner,  
Japan Patent Office

今 井 康 夫



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【整理番号】 AK05414

【提出日】 平成15年 5月 6日

【あて先】 特許庁長官 太田 信一郎 殿

【国際特許分類】 G03G 15/08

【発明の名称】 画像形成装置および画像形成方法

【請求項の数】 5

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